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WEATHER TOPICS

By M. W. CURRAN, M.D.

*Chatsworth, N. J.**(Continued from page 112)*

The weather preceding a storm is especially noted for its effects in producing neuralgia and rheumatic pains. This is, in a large part, due to increasing humidity. Indeed, changing humidity, by changing the rate of evaporation of the surface of the skin and consequently its temperature, profoundly affects the individual and contributes largely to his comfort or discomfort. It is this which makes the difference between the bright and cheerful hot weather of the arid regions and the muggy, insufferable weather, close, moist, and sweltering, which precedes summer thunderstorms at low elevations in the eastern states. The temperature of evaporation is substantially the temperature that is felt and it is this that makes the hot weather of New Mexico quite as endurable as that of Ohio.

Clouds are collections of minute particles of water suspended in the atmosphere. While fog is principally formed by the cooling of the lower layers of the atmosphere, clouds are due more especially to the rising currents which, when cooled to the dew point, condense into cloud. The cloud masses, being heavier than air, tend to sink but the sinking takes place very slowly, partly because the water particles and the ice needles which compose the clouds are very small, and partly because the rising currents to which they owe their origin counteract the sinking process. A cloudburst is an exceedingly heavy rain over a small territory. It occurs only with local, not general storms, most commonly in the hottest season and at the hottest time of day. The rain falls four to six inches per hour but continues only a few moments. Meantime the phenomena of atmospheric electricity are usually marked. Thunder storms, unlike other storms, have a favored hour and one may look for them in the late afternoon or early evening. The thunder storm areas of the country are well defined, however, and beginning in the cooler regions of Maine which have an average of ten a year, pass through Philadelphia with its average of twenty to thirty and reach the highwater mark in the very center of the nation, where fifty a year is the average.

Humidity is the amount of moisture or vapor of water in the air. In atmospheric phenomena the vapor of water passes into the air by

evaporation. A given space at a given temperature can contain only a definite amount of water. If it contains less it will endeavor to fill up by evaporation; if it contains more the surplus moisture will condense. Vapor in the atmosphere, by reflecting back to earth the heat radiated into the air, equalizes the temperature and serves as a blanket to prevent the escape of heat. The enervating effect of a moist, hot atmosphere is well known and is in part due to the fact that such a condition of the air makes relief by perspiration impossible. The percentage of moisture in the air to what it could hold if saturated is called the relative humidity; it is measured by the hydrometer. Thus if the air contains half the moisture necessary to saturation, the relative humidity is 50; if only a third, it is 33. The vapor of water, like any other vapor or gas, exerts a pressure in its endeavors to expand. The pressure or tension of the vapor, expressed in inches or millimeters of the mercurial column of the barometer, is one way of expressing the absolute humidity or the absolute amount of vapor in the air.

Rain is the moisture of the atmosphere condensed into drops large enough to fall with perceptible velocity to the earth. The formation of rain is in general a continuation of the processes of the formation of clouds, dew and fog. The deposition of moisture depends on the cooling of the atmosphere.

Water, owing to its high specific heat, has an equalizing tendency on climate, which is extended to adjacent land by the wind; hence the difference between an insular and a continental climate. The preponderance of land in the northern hemisphere makes its seasons more marked, and the earth's average surface temperature is thus higher during the northern than during the southern summer.

The climate of the United States embraces all varieties from that of the tropics to that of the arctic. Its chief peculiarity is the rapid alternation of temperature, due especially to the "cold waves" accompanying areas of high pressure.

It is important to know the effect on human life and human sickness of good climates to which our invalids may be sent. The literature on the various health resorts is written mostly by men who reside there and is made up variously of several elements. (1) Scientific facts, concerning temperature, sunshine, humidity, cloudiness, altitudes, etc. (2) Personal experience and observation. (3) Arguments in favor of the particular climate and against the influences and qualities that rival climates possess.

When investigating a health resort, if you study its literature in

order to arrive at a conclusion, you must always take into consideration the sins of omission as well as those of commission. For instance, anyone studying the health and climatological conditions of south Jersey, particularly the piney region and coast resorts, would arrive at the conclusion that the mosquito was an unknown insect in that territory, inasmuch as no mention of the pest is made in any of the literature or descriptive circulars furnished by the railroads or hotelkeepers. As a matter of fact the mosquitoes are so abundant they render life very annoying for the healthy and for invalids they are simply intolerable. Real estate agents, hotelkeepers and railroads developing or depending on the prosperity of a resort, view the climatological disadvantages of their community very leniently; therefore, are not to be relied on. Personal experience is the only sure guide and while you may often be surprised at your discoveries, you will never be deceived nor will your patient be disappointed.

Climate is not a specific. It is a valuable aid. Alone, however, it will not usually effect a cure. Medical care cannot be dispensed with because the patient is in a favorable climate. Climate and a suitable régime of daily life and management are two mutually interdependent factors, a combination of both giving the best results.

A health resort must possess facilities for comfortable living, pure drinking water, good sanitation, proper, well-cooked food, efficient nurses and physicians, out-of-door facilities and ease of accessibility.

The human race is supposed to have come from the plateaus and mountain tops, from the roof of the world, the Himalayas. Human blood, at the top of Pike's Peak, contains thirty-three per cent more red corpuscles than it does at sea level. It also contains 50 per cent more white corpuscles. If the human blood is enriched and purified within a few days by the mere fact of elevation, why will it not be practical in time, to have floating hospitals in the air? The science of aeronautics is making such progress there seems to be little question that within a few years the mechanical difficulties of such a project will have been removed.

A patient, taken to a high altitude, is apt to suffer from mountain sickness. This is because the lungs have lost their facility in oxygen secretion and the patient is suffering from partial oxygen starvation. Instant relief can be secured by administering oxygen. After a few days the lungs rapidly develop the power to secrete oxygen and the blood is soon supplied with its normal amount. The increase of hemoglobin in the blood at high altitudes is not caused by a concentration

of the blood but by a scarcity of oxygen which stimulates the bone marrow to unusual activity. The volume of the blood remains the same but the blood increases in richness. It is now contended that the lungs have the power to secrete oxygen. They withdraw the oxygen from the air and add it to the blood. But this is done only when the lungs are forced to act. At sea level the amount of oxygen in the air is larger and the air pressure is heavier. As a result the lungs do not have to secrete it. The oxygen is forced almost mechanically into the blood, and the lungs, through lack of exercise, become weak. At a high altitude the lungs are forced to fight for the scant oxygen of the upper air which develops strength, thus giving the patient the chance to throw off the affliction. When exercising freely in high altitudes, the lungs give off combustion products which cause headaches and mountain sickness.

PIONEER DAYS¹

By HARRIET PEOPLES

As I look over our big state, I cannot but wonder at the great changes that have taken place in the last few years. Railroads and automobiles have taken the place of the old stages with their four and eight horses; little towns, here and there, have sprung up as in a single night on land where once you could ride for miles and miles, seeing only sage brush and a few pine trees on the hillside, with now and then a jack-rabbit. Today we have little ranches with houses and barns, not dirt-roof cabins or straw sheds, but little cottages with good barns full of hay and grain, while orchards and flower gardens all add beauty to them.

Not only has a great change taken place in our schools, in the agricultural and mining world, but also in the medical and nursing world. Fifteen years ago I landed in Montana; after a two-day stay in our capital city, I was sent out to a mining town by one of our leading physicians. My first word of greeting was: "You are too young. What do you know about sick babies?" They evidently were looking for an old lady with strings tied under her chin. After the doctor had given me the orders for my little patients, the mother began telling me where I would find things in the kitchen to prepare the meals. A

¹ Read at the third annual meeting of the Montana State Association of Graduate Nurses, Billings, Montana, June, 1914.